# Summary Report of Hydrologic Unit Codes Data Standard With Standard Reference Domains

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## 1.0 INTRODUCTION

The Environmental Protection Agency (EPA) Office of Information Resources Management (OIRM) Enterprise Information Management Division (EIMD), through the mission of its Information and Data Management (IDM) Program, has introduced the concept of centralized management and coordination of EPA's distributed information and data resources. The data policies and standards of the IDM program will be supported by a data architecture, data models, standard data element domains, and a repository of standard data elements. These work products will facilitate data sharing efforts and demonstrate EPA's effective management of its Information Resources Management (IRM) resources.

### 1.1 Background

The One Stop Reporting Program was initiated by the EPA Executive Steering Committee (ESC) for the purposes of improving the Agency's management of environmental information and reducing the burden of reporting across the regulated community. The intended process for improvement of information management is to involve the stakeholders, particularly the states, in determining the data standards to be developed. To further the goals of the One Stop Program, the Information and Data Management Service Center (IDMSC), Delivery Order (DO) 57, has been tasked to identify the need for data standards that will facilitate data sharing and to develop data standards that are used within the Agency and its state partners. One of those needs identified is the development of standard data elements and domains for representation of hydrologic units by Hydrologic Unit Codes (HUC).

The drainage basins, identified by HUC codes, are of major importance to EPA water programs. HUC codes were developed and are maintained by the Geological Survey, U.S. Department of the Interior, under a Memorandum of Understanding with the U.S. Department of Commerce, National Institute of Standards and Technology. The codes represent the four levels of classification in the hydrologic unit system: 21 major regions, each containing the drainage area of a major river or the combined drainage areas of a series of rivers; 222 planning subregions, including the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin or basins, or a group of streams forming a coastal drainage area; 352 accounting units, a subdivision of planning regions; and 2,149 drainage basins, identified as cataloging units.

### 1.2 Purpose

The purpose of this report is to document the standard data elements and the acceptable values (i.e., domains) developed for HUC and to certify the authority for their accuracy and validity.

### 1.3 Scope

This document is limited to the standard data elements that have been registered in the EPA Environmental Data Registry (EDR) and the corresponding domains of valid data for those data elements.

### 1.4 References

The following materials were used in the preparation of the HUC standard data elements and domain values:

• *Codes for Hydrologic Units in the United States and the Caribbean Outlying Areas,* Federal Information Processing Standard (FIPS) Publication 103, November 13, 1983, which adopts the set of codes published in Geological Survey Circular 878-A, J uly 1981.

• *Hydrologic Units, Hydrologic Unit Codes, and Hydrologic Unit Names,* Adapted from Seaber, P.R., Kapinos, F.P., and Knapp, G.L., 1987, Hydrologic Unit Maps: U.S. Geological Survey Water-Supply Paper 2294, 63 p., http://txwww.cr.usgs.gov/hcdn/hydrologic_units.html.

## 2.0 METHODOLOGY

The Project Team followed the One Stop data standard development procedure. Data standards include two components: standard data elements recorded in the EDR and standard data values for all data elements where only a discrete set of data values are acceptable. The procedure followed included analysis of the requirements, development of a logical data model in third normal form, recording the standard data elements in the EDR, identification of an authoritative source of domain data, preparing that data in the appropriate formats for update to the EDR, and update of that domain data into the EDR database.

### 2.1 Description of HUC Codes

HUC codes consist of two to eight digits, based on the four levels of classification in the hydrologic unit system. The 21 major regions of the U.S., each containing the drainage area of a major river or the combined drainage areas of a series of rivers are represented by a 2-digit code (RR). The 222 planning subregions, including the area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin or basins, or a group of streams forming a coastal drainage area, are represented by a 4-digit code (RRPP). The third level of classification, the 352 accounting units, are represented by 6-digit codes (RRPPAA). Theseare further subdivided into the 2,149 drainage basins, which are known as cataloging units and are represented by 8-digit codes (RRPPAACC). Units have been assigned names (text describing boundaries) which are unique at the region and subregion levels, but not at the accounting and cataloging levels.

### 2.2 Data Model

The data model for hydrologic units is provided in Appendix A.

### 2.3 Standard Data Elements

The standard data elements (DE) developed for HUC are the following:

• Hydrologic Region Code -- The first level of hydrologic unit code (HUC) that represents a hydrologic area based on surface topography that contains either the drainage area of a major river or the combined drainage areas of a series of rivers. (DE 5877, 2-char [RR]).

• Hydrologic Planning Subregion Code -- The hydrologic unit code (HUC) that represents an area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin or basins, or a group of streams forming a coastal drainage area. (DE 5875, 4-char [RRPP]).

• Hydrologic Accounting Unit Code -- The hydrologic unit code (HUC) that represents an area that nests within or is equivalent to a planning subregion. (DE 5871, 6-char [RRPPAA]).

• Hydrologic Cataloging Unit Code -- The hydrologic unit code (HUC) that represents a geographic area representing part or all of a surface drainage basin, a combination of drainage basins, or a distinct hydrologic feature. (DE 5873, 8-char [RRPPAACC]).

Detailed information about these data elements, their domains, and permissible values are provided in Appendix B as a report generated from the EDR.

**3.0 WORLD WIDE WEB LINKAGES**

The HUC codes are particularly useful in determining facilities and other business objects of interest to EPA that lie within a particular drainage basin. EDR provides linkages to the EPA Office of Water's (OW) *Surf Your Watershed* site (http://www.epa.gov/surf/surf_search.html) where information is available related to HUC cataloging units. The World Wide Web (www)site *http://epainotes1.rtpnc.epa.gov:7777/water/surfnote.nsf/Access+Data?OpenView*

lists the following selection of topics matched to HUC codes (identified as USGS catalog units) available for download from the site:

City Names Counties

Rivers Local-Scale Ecosystems

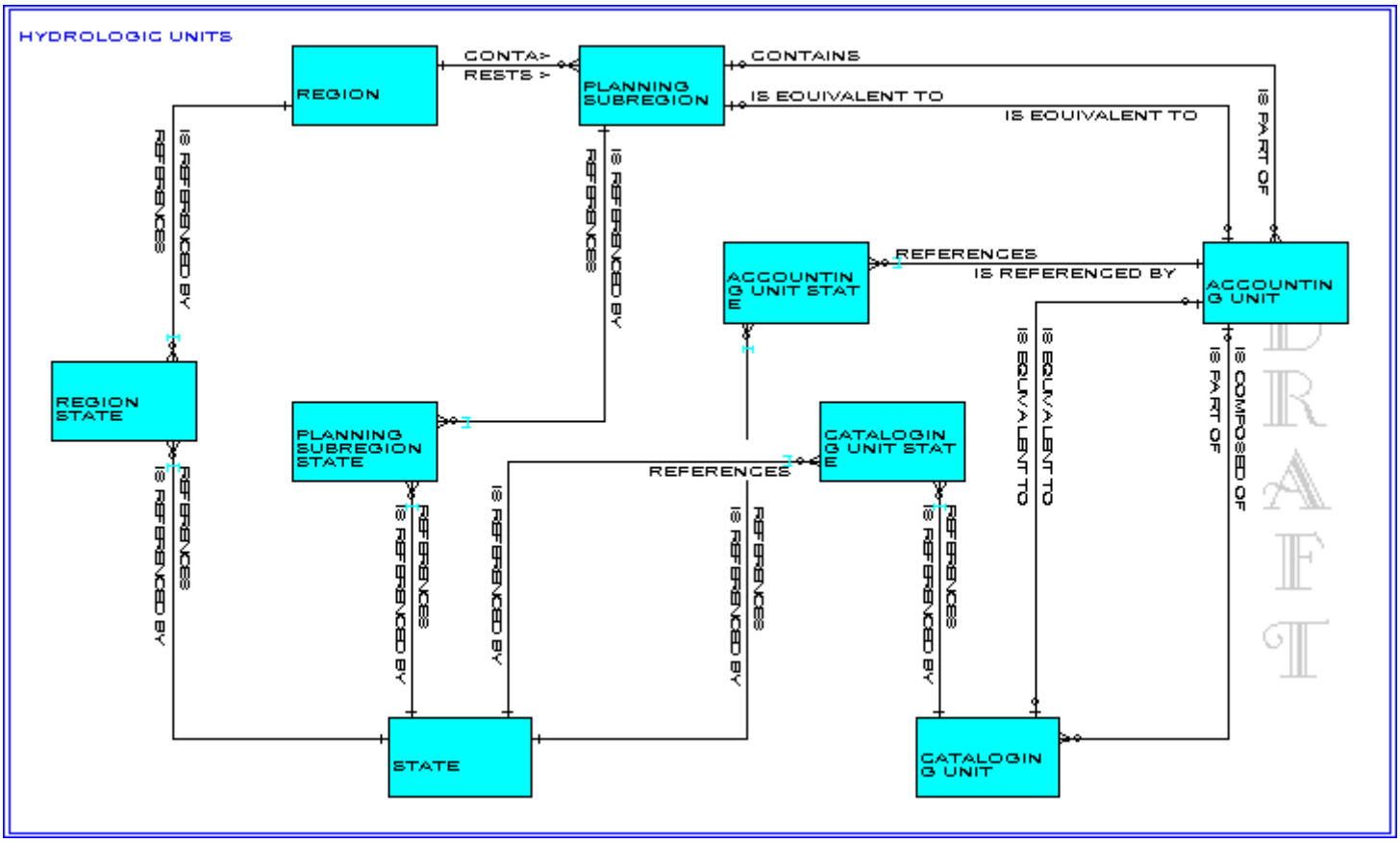
NPDES Dischargers Large-Scale Ecosystems

States National Coastal Assessment Framework

Tribal Lands National Estuary Programs

Zip Codes

**APPENDIX A** Data Model for Hydrologic Units




**Data Model for Hydrologic Units**

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## Appendix B Standard Data Elements for Hydrologic Units

The information contained in Appendix B can be obtained from the Environmental Protection Agency's Environmental Data Registry. To view the current information, select **Data Element Identifier and Version Query** and enter the Data Element Identifier and Version for the elements listed in the table below.

| ID | Version | Name |
|---|---|---|
| 5877 | 1 | Hydrologic Region Code |
| 5875 | 1 | Hydrologic Planning Subregion Code |
| 5871 | 1 | Hydrologic Accounting Unit Code |
| 5873 | 1 | Hydrologic Cataloging Unit Code |